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RPS Lists

AIR WEATHER SERVICE

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HQ AWS/XON
102 W Losey Street Room 105
Scott AFB, IL 62225-5206

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The RPS list consists of up to 20 products you use most frequently. The products you put on the list are a function of the Volume Coverage Pattern (VCP), weather regime, experience, personal preference and station policy. Keep in mind you must request any product not on the RPS list from the RPG each time it is desired. Therefore, you should include any product used often or desired routinely. Some products, such as custom-built products, are generally not suited for inclusion in an RPS list.

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"Readiness through Knowledge"

Headquarters Air Weather Service
Aerospace Sciences Division

Providing Service Worldwide

HQ AWS/XON
102 W Losey St Rm 105
Scott AFB IL 62225-5206
DSN 576-4721, ext. 447

Theater	
Tropical/Far East	ext. 250
Europe	ext. 511
CONUS	
Southern	ext. 426
Western	ext. 418
Central	ext. 502
Eastern	ext. 221

XON Email Comment/Suggestion address
hqawsxon@hqaws.safb.af.mil

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RPS Lists

By

Headquarters Air Weather Service, Aerospace Sciences Division
Scott AFB, Illinois

INTRODUCTION

The Routine Product Set (RPS) is a list of products sent to you each volume scan. The current RPS list is the one actively in use. Adaptation lists are a library of 10 other lists you can create for different weather regimes (clear air, convection close to the Radar Data Acquisition (RDA) site, convection far away, stratiform precipitation or snow, etc.).

The RPS list consists of up to 20 products you use most frequently. The products you put on the list are a function of the Volume Coverage Pattern (VCP), weather regime, experience, personal preference and station policy. Keep in mind you must request any product not on the RPS list from the RPG each time it is desired. Therefore, you should include any product used often or desired routinely. Some products, such as custom-built products, are generally not suited for inclusion in an RPS list.

This *Echoes* supersedes *Echoes 6, WSR-88D Routine Product Set (RPS) Lists*. We've expanded the RPS list consideration discussion, included a more comprehensive description on editing the current, and adaptation RPS lists, modified the lists to make them valid for either VCP 11 or 21, and included the Storm Structure Product which is needed for the cell trend display in Build 9.0. A blank RPS list is also included for you to mark and post next to your PUP.

RPS List Considerations

System Considerations

When developing an RPS list, you should consider the system weather mode (clear air or precipitation), VCP, resident User Functions (UF), and any Time Lapse (TL) loops. For example, in clear air mode using VCP 31 or 32, only five low-level elevation scans are made and certain products (e.g., hail and echo tops) are not available. In precipitation mode, VCP 11 samples 14 elevation scans which includes a 7.5 degree elevation, but VCP 21 (9 elevation cuts) does not. Therefore, base products for 7.5 degrees would only work with VCP 11. The RPS should also include products needed by appropriate UFs and TLs.

You must maintain properly tailored adaptation RPS lists A (precipitation mode) and B (clear air mode). Whenever there is a change in the weather mode, the system automatically invokes the appropriate list. When switching from clear air mode to the precipitation mode, RPS list A replaces the current list. Conversely, when switching from precipitation to clear air mode, RPS list B replaces the current list. Neither adaptation list A nor B should ever be blank since the result would be the reception of only one-time product (OT) requests or alert-paired products.

Weather Regime Considerations

Anticipated weather regimes (e.g., convective, stratiform, or embedded convective precipitation) and the threats (e.g., heavy rain, hail, etc.) play an important part in adaptation RPS list composition.

Another important influence, particularly in base product elevation choices and resolutions, is the expected range of weather types or threats. In some cases it may be possible to know in advance that convective storms will be confined to the fringes of the radar coverage area (>100 nm). In that case, only the lowest three or four consecutive elevation angles would be chosen for base products. In other cases, convection may be anticipated and confined very near the RDA, thus dictating high resolution and higher elevation angles for base products. During many weather regimes, convection may occur at all ranges demanding "generic" or mixed RPS-based product entries.

Since there are 10 adaptation lists, A through J, you can plan in advance the lists which apply to various weather regimes.

Product Type Considerations

Certain product types are more appropriate for OT requests rather than RPS lists. Window products and vertical cross sections requiring a center position or azimuth, are not typically used in an RPS list. Exceptions do occur. If a fixed geographical location requires continuous high resolution monitoring, you might need the Severe Weather (Analysis) Reflectivity or Reflectivity Cross Section products at that location every volume scan. So, you could include those positioned products on an RPS list. You could also generate those same positioned products via the OT request for up to nine volume scans using the OT repeat count option.

Communication Loading Considerations

At certain times and under certain conditions (e.g., VCP 11 and an extensive echo area), narrowband loadshedding may occur. This is especially true when 20 products are on the RPS list with widespread precipitation and with many OT requests or alert-paired products. The largest products are Spectrum Width and 16 data level 0.54 Composite Reflectivity. If you observe significant loadshedding, consider deleting infrequently used products from your current RPS list.

The data in Figure 1 shows RPG to Principal User Processor (PUP) transmission times based on test

data. Where a range in values is shown (usually base products), it is a reflection of the areal coverage of the weather. The greater the intensity of weather and the greater the area of coverage, the longer the transmission time. Use these data to develop RPS lists which satisfy the requirements for products and the available transmission time for volume scan.

A final and important point to maximize product availability, especially for those truly critical RPS products, is the Request Priority (REQ PRI). This is the narrowband transmission priority, not the RPG generation priority. If Request Priority is changed from the default high (H) to low (L), then those low-priority products will be the first to be shed during narrowband loadshedding situations.

EDITING RPS LISTS

Current RPS List Editing

At times, the current RPS list may need to be fine tuned to meet the current operational needs. This is done through editing the current RPS list.

Editing Procedures

- Select **NEXRAD UNIT STATUS** at the graphics tablet. This enables you to view available elevation angles in the current VCP. This will help you choose elevation angles for the RPS list.

- From the main menu of the applications terminal, type **R** and press <RETURN>. This brings up the Routine Product Set Menu.

- Type **E** and press <RETURN>. This step is necessary to either edit and/or view the current RPS list. Use **Page Forward (F7)** and **Page Back (F6)** function keys to view all three pages of the RPS list.

By convention, it is usually easier to list base products first, starting with lowest to highest elevation reflectivities, velocities, etc. These are then followed by the derived products. Doing this makes it easier to keep track of what is in the list.

- Type **M,2;** and press <RETURN>. The semicolon allows you to bring line 2 exactly as it is currently defined into the edit line.

You can also specify the product type in the command, in which case the command is **M,2,R**, if a reflectivity product is desired on line 2 or **M,15,VIL** for a VIL product on line 15. However, typing **M,2,R** would only bring up a reflectivity product with all parameters being default values. Therefore, if all you want to do is change one thing on the current line (other than the product type), using the semicolon is more useful.

- Make desired changes to line 2, using the **TAB** key to move from one edit field to another. Keep in mind that only those parameters applicable to the product type are editable.

- Once finished with edits for line 2, press <RETURN>. Your new line 2 replaces the old line 2 in the current list and the edit line goes blank.

- Type **D,4** and press <RETURN>. This deletes line 4 out of the list. Notice that the information on line 4 disappears, with lines 5-20 moving up and renumbered to fill in the blank line. If you page forward to the last page, you will see the list now has one less product.

- Type **I,9,V** and press <RETURN>. This will insert a new line after line 9. After editing this new line, press <RETURN>.

- Once finished with edits for line 10, press <RETURN>. Your new line 10 is inserted after line 9. Notice that the new line becomes line 10 and the previous line 10, and all those that follow, are renumbered as lines 11-20.

- When finished editing the current RPS list, press **F1** or **F2**. This action saves all changes and sends the altered list to the RPG. The RPG begins sending products to your PUP based on this new list at the start of the next volume scan. This action

Figure 1. Product Data RPG-to-PUP Transmission Times

Product	Approximate Transmission Time (in seconds at 9600 bps)
Reflectivity	7 - 20
Velocity	9 - 25
Spectrum Width	12 - 28
Combined Shear	< 20
Combined Shear Contour	< 10
Composite Reflectivity	15 - 30
Composite Reflectivity Contour	< 20
Echo Tops	< 5
Echo Tops Contour	< 5
Severe Weather Analysis Display	< 2
Severe Weather Probability	< 2
Velocity Azimuth Display Winds Wind Profile	< 2
VAD	< 2
Combined Moment	< 18
Cross-Section	< 2
Weak Echo Region	5 - 10
Storm Relative Mean Radial Velocity Region/Map	< 10
Vertically Integrated Liquid	< 5
Storm Tracking Information	< 2
Hail Index	< 1
Mesocyclone	< 1
Tornado Vortex Signature	< 1
Storm Structure	< 1
Layer Composite Reflectivity	< 20
Layer Composite Turbulence	< 10
User Alert Messages	< 1
Radar Coded Messages (RCM)	< 5
Free Text Message	< 5
Surface Rainfall Accumulation	< 20
Storm Total Rainfall Accumulation	< 20

also returns you to the main menu (F1) or previous menu (F2).

NOTE: If, after making several changes to the current RPS list, you decide to forego these changes and keep the list as it was, type **C** and press <RETURN> while still in the edit mode. This Cancel All command will undo everything you just did. The Cancel All command should also be used when exiting the RPS edit screen after merely viewing the list for information purposes. This keeps the PUP from sending an unchanged version of the RPS list to the RPG, which will help avoid inadvertent changes to the current RPS list.

Adaptation RPS List Editing

Each PUP may store up to 10 additional RPS lists (labeled A-J) for use in various scan strategies or weather regimes. You can edit these RPS lists in the same manner as the current RPS list. The main purpose for these lists is to invoke an entirely new list at once. This is useful when circumstances change requiring massive editing of the current

list, saving time and effort. Remember, it is important to note that whenever the weather mode changes (A or B), the PUP will automatically invoke the corresponding default RPS list which should be designed as a "first guess" for that mode. The default RPS lists are also used when the RPG is reset.

Editing Procedures

- From the main menu, type **AD** and press <RETURN>. This brings up the Adaptation Data Menu.

- Type **R,D,E** and press <RETURN>. This action allows editing and/or viewing of adaptation RPS list "D." Editing within this list or any other adaptation list (A-J) is done exactly as in the current RPS list.

Replace Current RPS List Procedures

This command tells the PUP to replace the current RPS list with a selected adaptation RPS list. The current list is lost and the select adaptation list is copied into the current list and becomes valid at the start of the next volume scan.

- From the main menu, type **R** and press <RETURN>.

- Type **RE,D** and press <RETURN>. This action replaces the current RPS list with adaptation list "D."

Replace Adaptation RPS List Procedures

This command tells the PUP to replace one adaptation list with another or with the current list. Once invoked, the selected replacement adaptation or current RPS list overwrites the selected destination adaptation RPS list.

- From the main menu, type **AD** and press <RETURN>.

- To replace adaptation list "E" with the current RPS list, type **R,E,RE,R** and press <RETURN>.

CONCLUSION

The RPS List is a powerful tool to customize your radar. By knowing the weather associated with various regimes, you can create RPS lists for the expected weather. Having lists built in advance will allow quick selection of the appropriate RPS list for the current weather and will allow for a quick change to the current RPS list when the weather changes. Prepared lists will ensure that all the needed products are available on the PUP for storm interrogation and eliminates the need to make massive changes to the current RPS list during severe weather.

Attachment 1 contains sample RPS lists and a blank RPS list matrix. The elevation angles selected allows the RPS lists (A,C-I) to be used with either VCP 11 or 21. These lists can be modified to meet your needs.

WSR-88D RELATED INTERNET LINKS

HQ AWS/XON Radar Applications
http://infosphere.safb.af.mil/users/aws/public_www/public/aws/hqaws/xon/xonradar.htm

NEXRAD Operations Support Facility
http://www.osf.uoknor.edu

Tales from the Hotline Catalog Online
http://www.osf.uoknor.edu/ops/1000.htm

National Severe Storms Laboratory (NSSL)
http://www.nssl.uoknor.edu

SUGGESTED RPS LIST AND BLANK RPS LIST MATRIX

Master RPS List Matrix											
	LIST										
PRODUCT	A	B	C	D	E	F	G	H	I	J	
0.5 R	X	X	X	X	X	X	X	X	X		
1.5 R	X	X			X			X	X		
2.4 R	X	X	X	X	X	X	X	X	X		
3.4 R	X				X			X	X		
4.3 R		X	X	X		X	X				
6.0 R				X			X				
9.9 R			X			X					
14.6 R			X			X					
19.5 R											
0.5 V	X	X	X	X	X				X		
1.5 V	X	X			X				X		
2.4 V	X	X	X	X	X				X		
3.4 V	X				X				X		
4.3 V		X	X	X							
6.0 V				X							
9.9 V			X								
14.6 V			X								
19.5 V											
0.5 SRM						X	X	X			
1.5 SRM								X			
2.4 SRM						X	X	X			
3.4 SRM								X			
4.3 SRM						X	X				
6.0 SRM							X				
9.9 SRM						X					
14.6 SRM						X					
19.5 SRM											
0.5 SW	X	X	X	X	X	X	X	X	X		
1.5 SW	X	X							X		
2.4 SW		X							X		
3.4 SW									X		
4.3 SW		X									
6.0 SW											
9.9 SW											
14.6 SW											
19.5 SW											
CR 0.54	X	X	X	X	X	X	X	X	X		
CR 2.2	X								X		
ET	X			X	X		X	X			
SWP											
VAD											
VWP	X	X	X	X	X	X	X	X	X		
VIL	X		X	X	X	X	X	X	X		
STI	X		X	X	X	X	X	X			
HI	X		X	X	X	X	X	X			
M	X		X	X	X	X	X	X			
TVS			X	X	X	X	X	X			
SS	X		X	X	X	X	X	X			
OHP									X		
THP											
STP	X		X	X	X	X	X	X	X		

Storm Distance from RDA	RPS	User Funcs
DEFAULT PRECIP MODE	A	
DEFAULT CLEAR AIR MODE	B	
CELL MVMNT < 20 kt, 0 - 30 nm (V)	C	1,2
CELL MVMNT < 20 kt, 30 - 70 nm (V)	D	4,5
CELL MVMNT < 20 kt, GT 70 nm (V)	E	7,8
CELL MVMNT ≥ 20 kt, 0 - 30 nm (SRM)	F	1,3
CELL MVMNT ≥ 20 kt, 30 - 70 nm (SRM)	G	4,6
CELL MVMNT ≥ 20 kt, GT 70 (SRM)	H	7,9
Stratiform/Winter Weather	I	
OPEN	J	

NOTE:
Does not include VCP11 specific elevations
0.54 Res unless otherwise noted

Storm Structure is needed in the RPS List to receive the Cell trend information.

SRMs are used for faster moving storms, so that significant features aren't masked by the overall storm motion.

User Function numbers are examples only.

Master RPS List Matrix										
	LIST									
PRODUCT	A	B	C	D	E	F	G	H	I	J
0.5 R										
1.5 R										
2.4 R										
3.4 R										
4.3 R										
6.0 R										
9.9 R										
14.6 R										
19.5 R										
0.5 V										
1.5 V										
2.4 V										
3.4 V										
4.3 V										
6.0 V										
9.9 V										
14.6 V										
19.5 V										
0.5 SRM										
1.5 SRM										
2.4 SRM										
3.4 SRM										
4.3 SRM										
6.0 SRM										
9.9 SRM										
14.6 SRM										
19.5 SRM										
0.5 SW										
1.5 SW										
2.4 SW										
3.4 SW										
4.3 SW										
6.0 SW										
9.9 SW										
14.6 SW										
19.5 SW										
CR 0.54										
CR 2.2										
ET										
SWP										
VAD										
VWP										
VIL										
STI										
HI										
M										
TVS										
SS										
OHP										
THP										
STP										

Storm Distance from RDA	RPS	User Funcs
DEFAULT PRECIP MODE	A	
DEFAULT CLEAR AIR MODE	B	

NOTE:
Does not include VCP11 specific elevations
0.54 Res unless otherwise noted

ECHOES

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ECHOES #16:	Operational Uses of VIL (Supersedes ECHOES #13)	Jan 96
ECHOES #17:	RPS Lists (Supersedes ECHOES #6)	Nov 96

Superseded ECHOES are not listed.